



Enabling Joint Distributed Testing

# Joint Mission Environment Test Capability

09 December 2010

## JMETC Brings Readily Available Persistent Connectivity for Joint Distributed Test Events

The Joint Mission Environment Test Capability (JMETC) program provides readily available persistent network connectivity to the Department of Defense (DoD) and Services' distributed test capabilities and simulations, as well as industry test resources. JMETC uses the Secret Defense Research and Engineering Network (SDREN) which is the network established to support research, development, testing, and engineering (RDT&E) and science & technology (S&T) activities in the Department of Defense. JMETC is a corporate approach for linking distributed facilities and enabling its customers to efficiently and effectively evaluate their warfighting capabilities in a Joint context; providing compatibility between testing, experimentation and training. As a distributed live, virtual, and constructive (LVC) testing capability, JMETC supports the acquisition community during program development, developmental testing, operational testing, and interoperability certification, including demonstration of Net Ready Key Performance Parameters (KPP) requirements in a customer-specific Joint Mission Environment. In addition to connectivity, JMETC provides common middleware, standard

data interfaces, tools, data management, and a reuse repository for collaboration. JMETC, although a testing capability, is aligned with and complemented by the Joint Forces Command (JFCOM) Joint National Training Capability (JNTC) to foster test, training, and experimental collaboration.

Currently, JMETC has activated 61 customer sites with more in the connection process to be completed during 2010. JMETC's persistent network infrastructure is encrypted for Secret operation and includes sites at Defense industrial facilities. This infrastructure also can be connected to the JNTC sponsored Network Aggregation Router to further increase connectivity by bridging to sites on other classified networks to include JNTC Joint Training and Experimentation Network (JTEN), and other classified enclaves.

The JMETC Program Office determines sites for JMETC connection based on the customer's needs and the potential for reuse. Once a site has been approved for connection, the JMETC team, including the JMETC System Control (SYSCON) at Patuxent River MD, begins the connection process. The site will work with JMETC to address any connectivity issues and requirements.

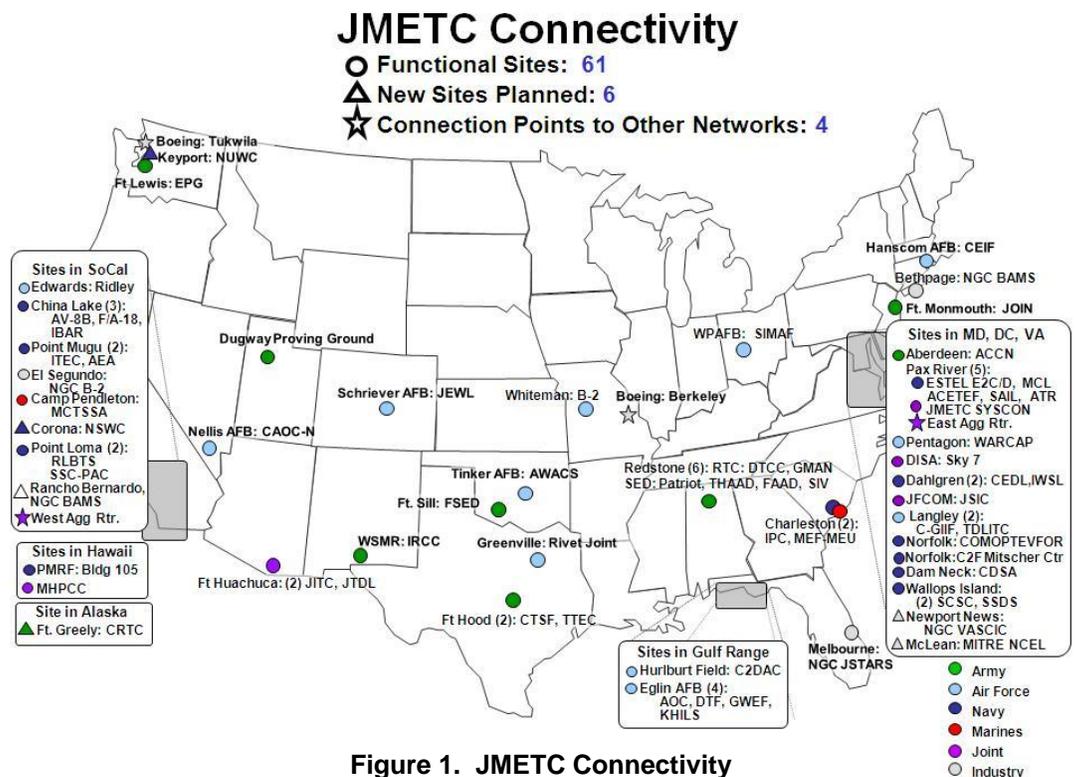
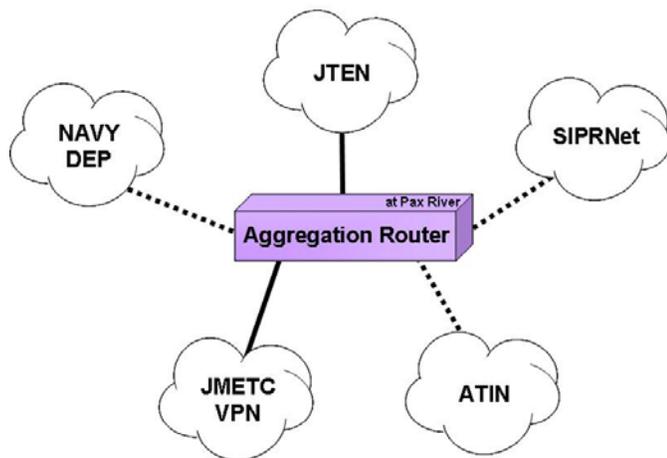


Figure 1. JMETC Connectivity



**Figure 2. Aggregation Router**

The JMETC team monitors the actual performance of the network (latency, throughput, jitter, packet loss) and continually compares it to expected performance to ensure the network is meeting the needs of the test customer. Performance is continually monitored with the SDREN Active Measurement Program (SAMP). The SAMP is a collection of sensors connected at all the JMETC sites used to gather network characteristics each night using customized Internet Control Message Protocol (ICMP) and New Test Transmission Control Protocol (NUTTCP) scripts. The scripts are operated and managed by the JMETC SYSCON, with the SDREN Network Operations Center (NOC) providing maintenance as required for these devices. Each morning the SYSCON personnel review the on-line SAMP data. In addition to providing network performance management, utilization monitoring and analysis, the JMETC SYSCON is the first contact for sites experiencing network issues. The SYSCON troubleshoots, records, and tracks potential problems and issues. The SYSCON also provides Voice over IP (VoIP), Secure File Transfer Protocol (SFTP) and text chat services to JMETC sites.

### JMETC Customers

JMETC is partnered with the Joint Integrated Air & Missile Defense Office (JIAMDO) to provide test support for Air & Missile defense related tests in 2010. JIAMDO testing consists of many interoperability and sensor integration tests and track correlation tests between various sensor systems. Risk mitigation events with various scenarios will take place using JMETC connectivity in 2010.

Another project using JMETC connectivity is the Interoperability Test and Evaluation Capability (InterTEC) project, an initiative of the Central Test Evaluation Investment Program (CTEIP). InterTEC is an integrated test solution for end-to-end interoperability test and evaluation of C4ISR systems and provides some of the net-centric test tools available within JMETC. JMETC furnishes the persistent network infrastructure, additional distributed tools and middleware; the Test and Training Enabling Architecture (TENA) for InterTEC

testing. The combination of InterTEC and JMETC connectivity provides the test infrastructure to support Joint net-centric testing over various phases of an acquisition life cycle. During 2008 and 2009, InterTEC test events included over 20 JMETC sites per single test event.

A major use of JMETC connectivity in 2008 was the Future Combat System's (FCS) Joint Battlespace Dynamic Deconfliction (JBD2) / Joint Test and Evaluation Methodology (JTEM) 08 test. The event had two objectives 1) assess suitability of the JTEM Capability Test Methodology (CTM) 2) assess readiness of FCS test technologies in preparation for its Milestone C test activities. JMETC provided the persistent network connectivity, software interfaces, and software tools needed to support the test. The JMETC SYSCON connected 16 laboratories for the event, including several sites on the JTEN and AF-ICE networks connected via the Aggregation Router. Since JBD2, AF-ICE has migrated all of its sites off of their own network and over to JMETC.

JMETC connectivity was also used in Persistent Fire (PF) 09-01. The event involved the Global Cyber Integration Center (GCIC), Langley AFB; the Simulation and Analysis Facility (SIMAF), Wright-Patterson AFB; 46<sup>th</sup> Test Squadron, Eglin AFB; and United States JFCOM J84. PF 09-01 assessed initiatives including Warplan Warfighter Forwarder (WWF), Global Awareness Presentation Services (GAPS), Airborne Web Services, and network enhancements such as Multifunctional Advanced Data Link (MADL) and Flexible Access Secure Transfer (FAST). In addition to persistent connectivity, JMETC Tools were used at each site.

Another event for 2009 utilizing JMETC connectivity was the Joint Expeditionary Force Experiment 09-2/3 (JEFX 09-2/3). JEFX is an Air Force Chief of Staff directed series of experiments that combines live, virtual, and constructive forces to create a near-seamless warfighting environment to assess the ability of providing needed capabilities to warfighters. The focus was on live fly communications and airborne data links. The main sites included the Combined Air Operations Center-Nellis (CAOC-N) at Nellis AFB, the 505 Command and Control Wing (CCW) at Hurlburt Field, Global Cyberspace Integration Center (GCIC) at Langley AFB, the Eglin AFB Guided Weapons Evaluation Facility (GWEF) and Eglin AFB Command Control Test Facility – Datalink Test Facility (C2TF-DTF).

For more information about JMETC, contact: George Rumford, JMETC Senior Technical Advisor or Ryan Norman, JMETC Lead Systems Engineer, E-mail: [feed-back@jmetc.org](mailto:feed-back@jmetc.org) or go to the JMETC Web Site: <https://www.jmetc.org>.